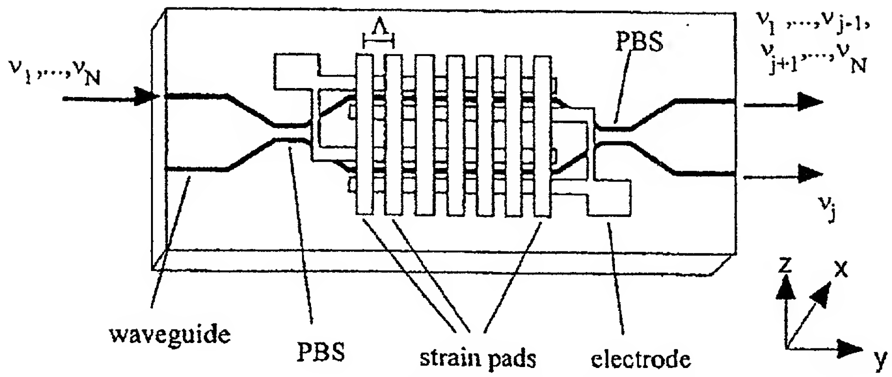


Fig. 1. Prior-art EOTF design.

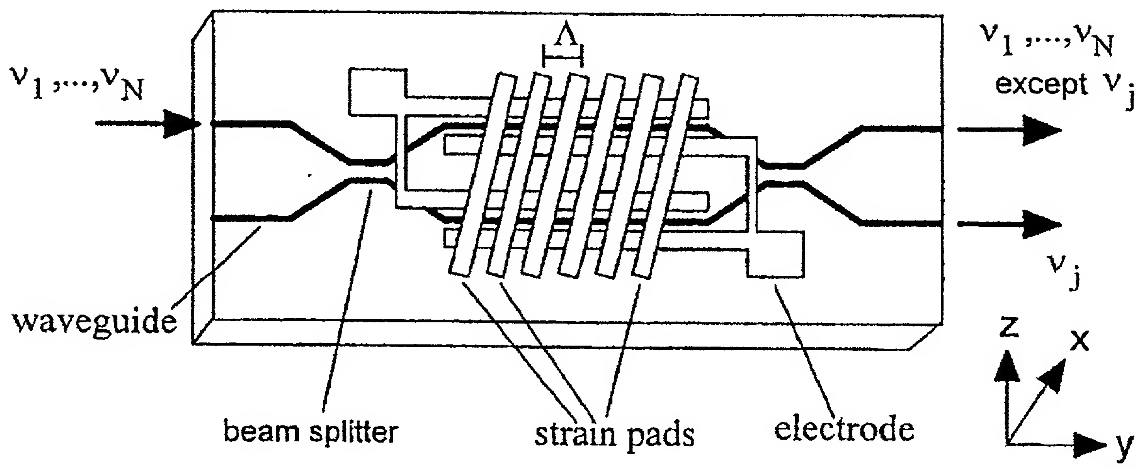


Fig. 2. Prior-art EOTF design with relaxed beam splitter requirements.

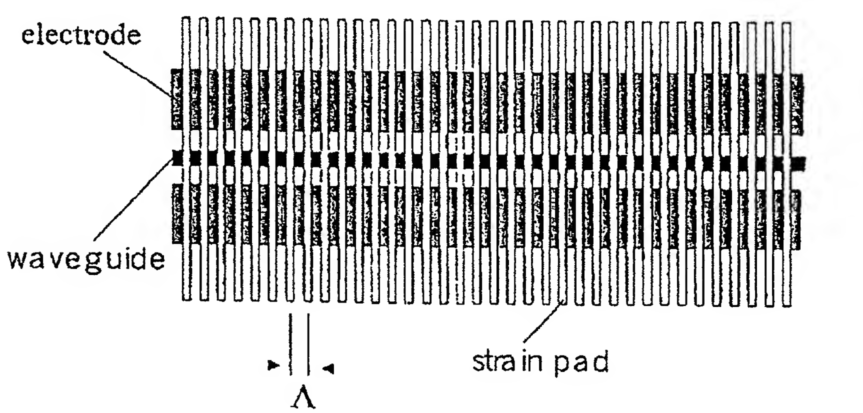


Fig. 3. Expanded view of polarization conversion/electrooptic tuning region of EOTF.

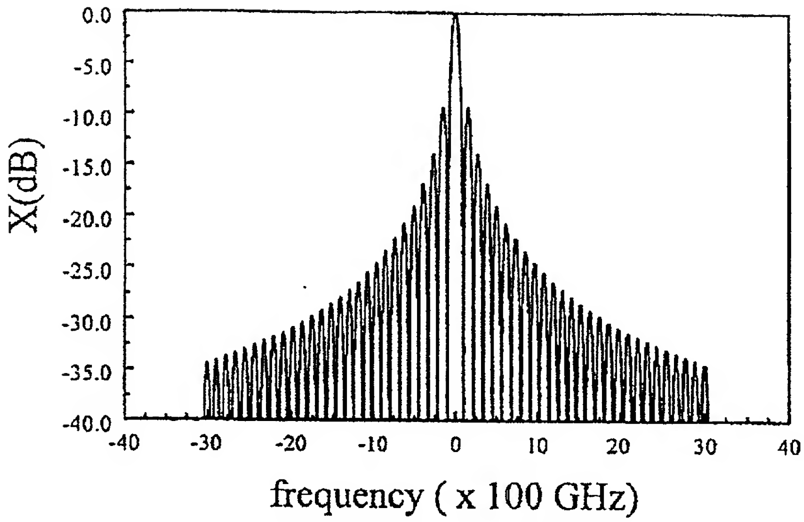


Fig. 4. Predicted polarization conversion efficiency vs. optical frequency for waveguide section of Fig. 3.

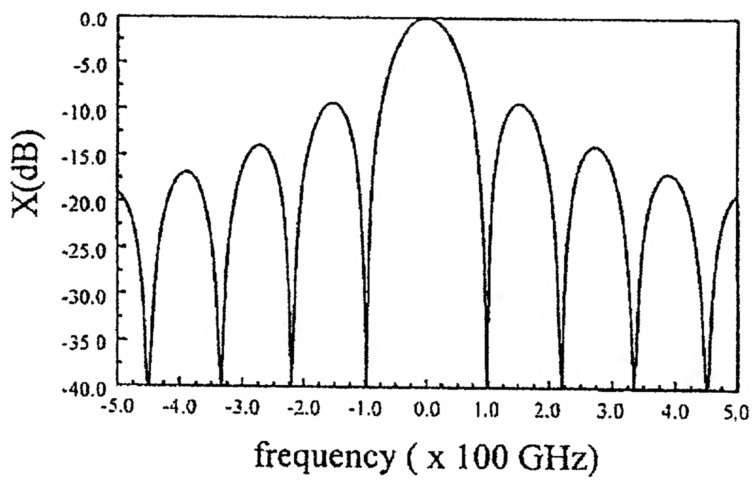
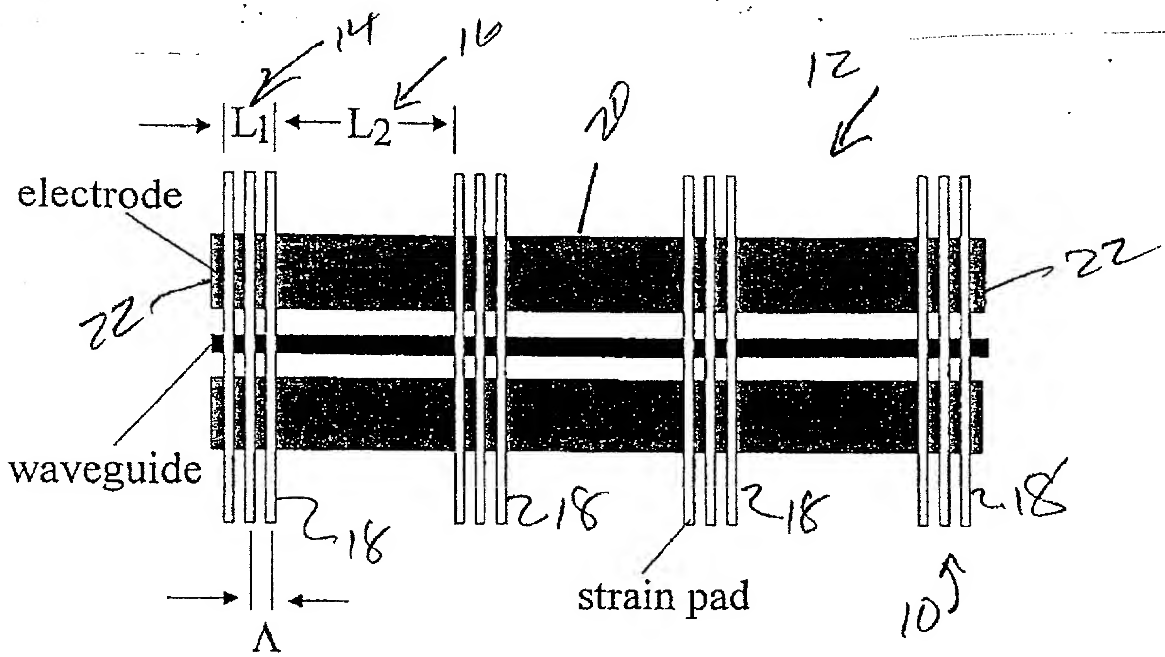
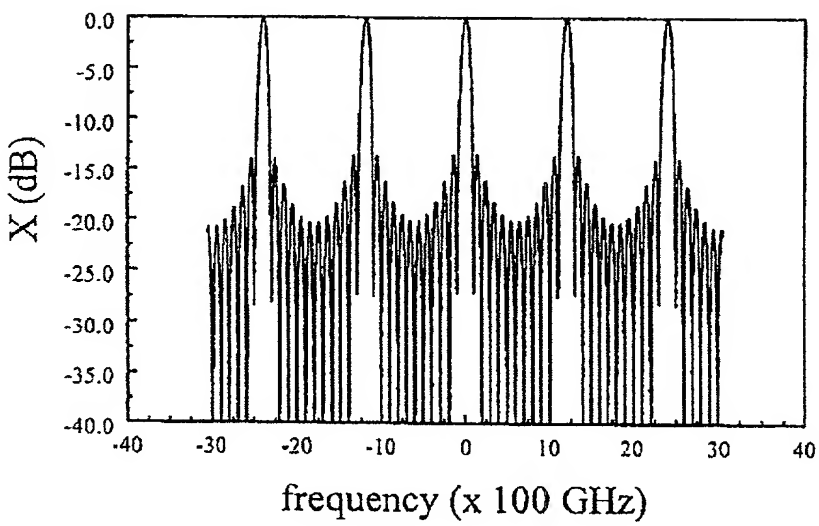


Fig. 5. Plot of Fig. 4 with frequency scale expanded.



14
16
12
L1
L2
20
electrode
22
22
waveguide
18
18
18
18
strain pad
10
Λ

Fig. 6.



0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
X (dB)
-40
-30
-20
-10
0
10
20
30
40
frequency (x 100 GHz)

Fig. 7.

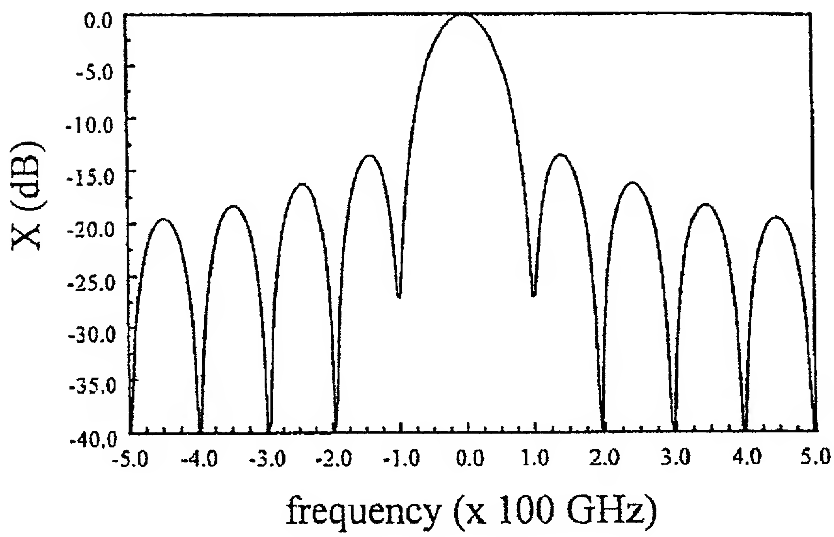


Fig. 8. Plot of Fig. 7 with expanded frequency axis.

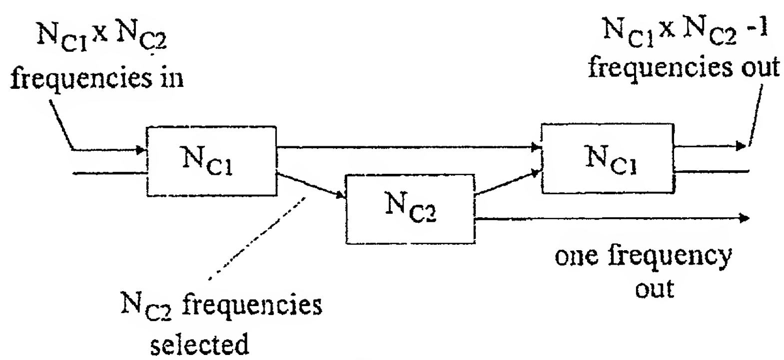


Fig. 9.

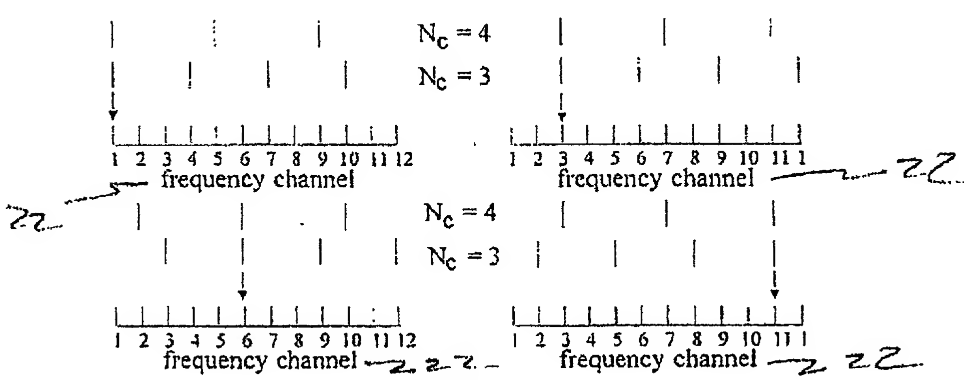


Fig. 10.

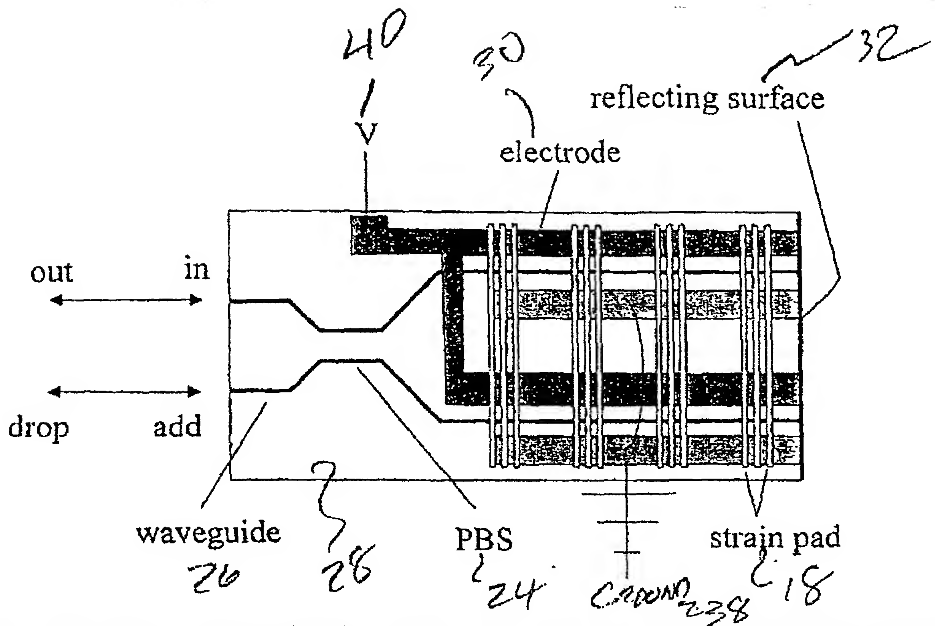


Fig. 11. Reflective configuration for EOTF. The reflecting surface could be a multilayer dielectric film or a metal film deposited on the end of the substrate.

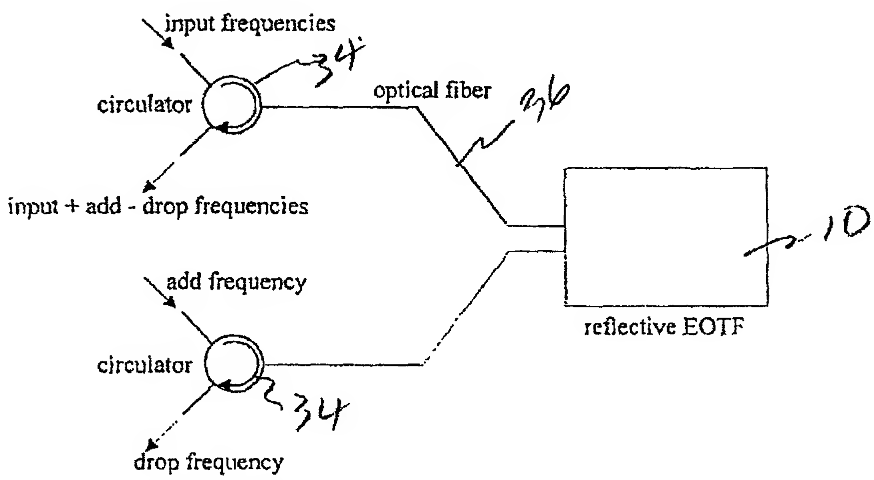


Fig. 12. Four-port add-drop filter utilizing reflective EOTF.

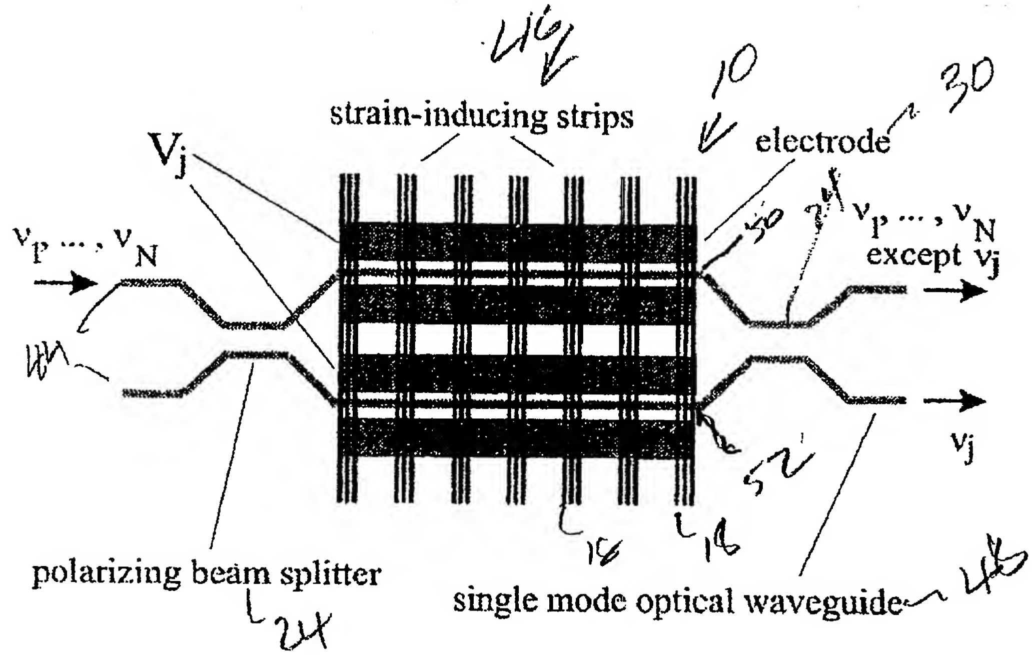


Fig. 13a. New EOTF design incorporating "sparse-grating" polarization coupling as illustrated in Fig. 6.

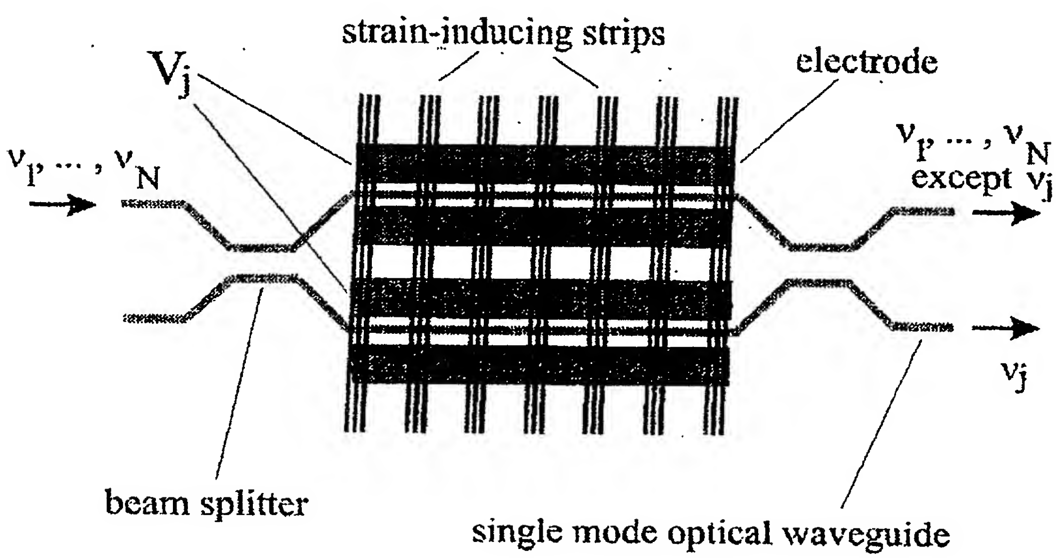


Fig. ~~13b~~ 14. ~~Modification of the design in Fig. 13a to accommodate the "relaxed~~ beam splitter" concept embodied ~~in TAMUS 1460 (See Fig. 2).~~ In this design the strain pads are slanted and ~~polarizing beam splitters are not required.~~

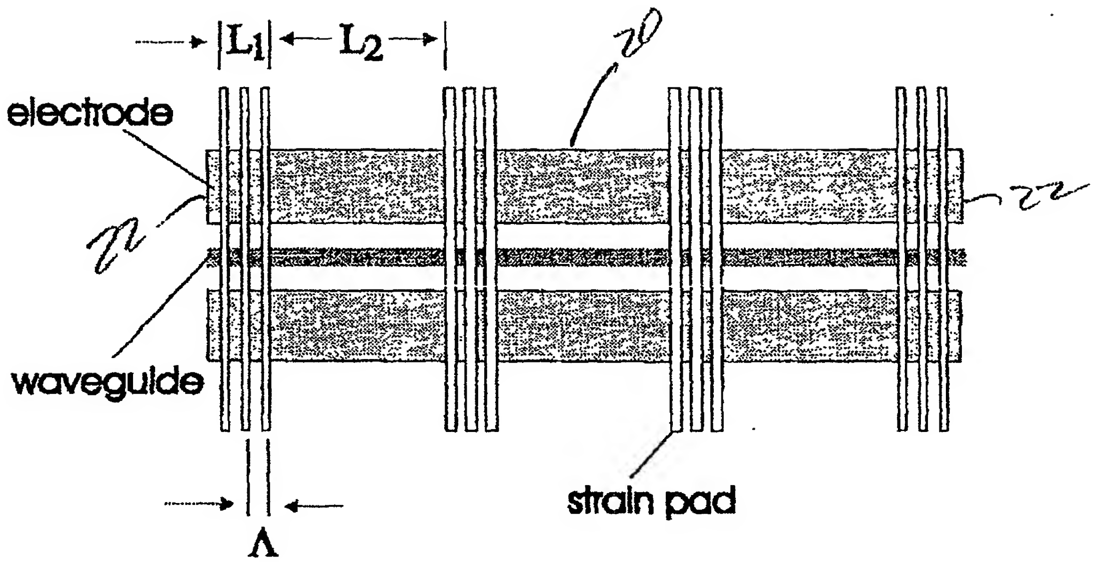


Fig. 15. Apodization of polarization coupling strength by varying the width of the strain-inducing pads. The polarization coupling is strongest at the center of the polarization conversion region where the pads are wider.

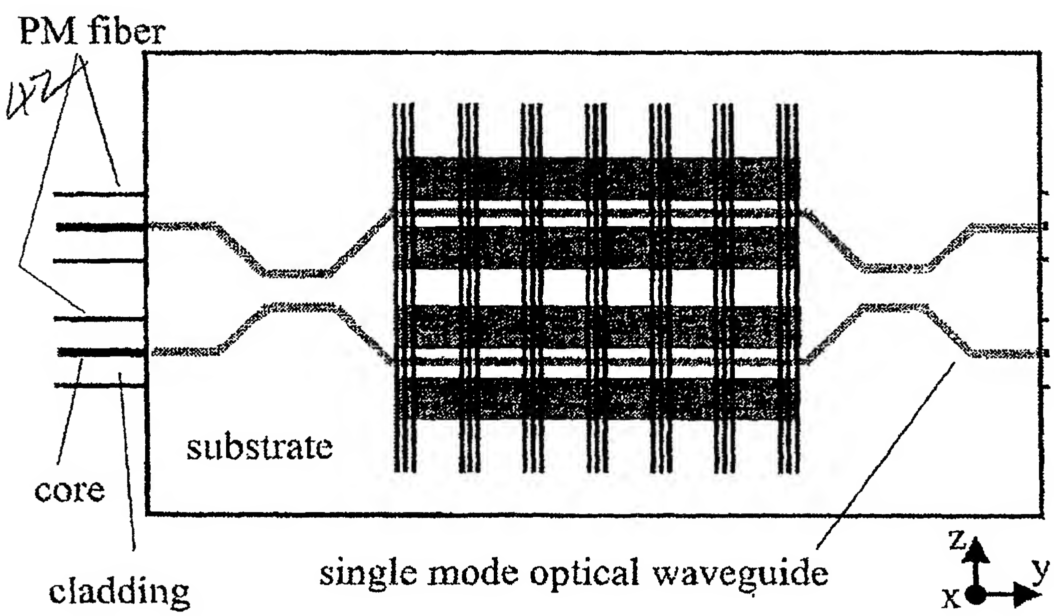


Fig. 16. Use of polarization maintaining (PM) fiber to equalize the time delay for different polarizations of light. A section of PM fiber of given length L_{PM} is connected to the single mode waveguides at each of the EOTF ports. In the birefringent substrate the fast axis is in the z-direction and the slow axis is in the x-direction. In contrast, the fast axis of each of the PM fiber sections is in the x-direction and the slow axis is in the z-

direction.

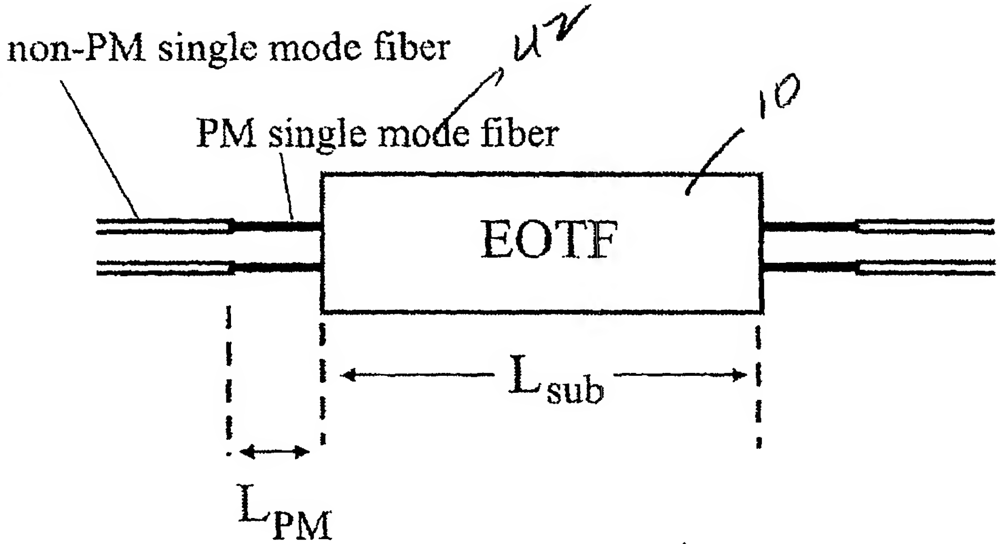


Fig. 17. Illustration of how the PM fiber sections of Fig. 16 are connected to conventional "non-PM" single mode fibers. The length of each of the PM fiber sections L_{PM} is related to the length of the substrate L_{sub} by the expression $L_{PM}\Delta n_{PM}=L_{sub}\Delta n_{sub}/2$, where Δn_{PM} and Δn_{sub} represent the birefringences of the fiber and substrate, respectively.